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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,332	04/02/2001	Jackson I. Ito	MAC-0113-US	9413

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EXAMINER

RUDNICK, DOUGLAS W

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/824,332

Applicant(s)

ITO ET AL.

Examiner

Douglas W Rudnick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15,18-23,25,37-53 and 55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15,18-23,25,37-53 and 55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 15, 18-23, 25, and 37-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metrailer et al. in view of Koveal et al. (US 6199768).

With respect to claim 15:

Metrailer et al. discloses:

A central passageway (Fig. 2, 30)

At least one feed inlet (Fig. 1, 14)

An atomization zone (Fig. 2, 35) downstream from feed inlet

At least one atomization fluid passageway (Fig. 2, 33)

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Atomization fluid passageway outlets have a forward angle greater than 60 degrees (Fig. 2 and Col. 3, lines 3-5)

Atomization fluid passageways are positioned concentrically about the perimeter of the central passageway (Fig. 2)

A heating zone (Col. 2, lines 66-69) which is upstream from atomization zone (Fig. 2)

A first mixing zone (Fig. 1, 11)

A second inlet (Fig. 1, 15)

The second inlet upstream from atomization fluid passageway outlet (Fig. 1)

Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to the second inlet comprising a sparger. Koveal et al. teaches a second inlet comprising a sparger (Fig. 7, 198) for the purpose of achieving better movement of the steam and oil mixture.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a second inlet comprising a sparger in Metrailler et al. in order to achieve better movement of the mixture as taught by Koveal et al.

With respect to claim 18:

Metrailler et al. discloses:

Central passageway has a two dimension cross-section wherein at least one of the dimensions converges downstream (Col. 3, lines 22-25)

With respect to claim 39:

Metrailler et al. discloses:

Central passageway has a two dimension cross-section wherein both of the dimensions converge downstream (Col. 3, lines 22-25)

With respect to claim 40:

Metrailler et al. discloses:

Central passageway has a two dimension cross-section wherein both of the dimensions converge downstream (Col. 3, lines 22-25)

With respect to claims 22, and 43:

Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to the second inlet comprising a sparger. Koveal et al. teaches a second inlet comprising a sparger (Fig. 7, 198) for the purpose of achieving better movement of the steam and oil mixture.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a second inlet comprising a sparger in Metrailler et al. in order to achieve better movement of the mixture as taught by Koveal et al.

With respect to claim 44:

Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to a stream splitter. Koveal et al. teaches a stream splitter (Fig. 5, 118) for the purpose of splitting the fluid flow into two identical streams.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a stream splitter in Metrailler et al. in order to split the fluid flow into two identical streams as taught by Koveal et al.

With respect to claims 48 and 49:

Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to the spray distributor fluid passageway having a two dimensional cross section wherein at least one dimension diverges. Koveal et al. teaches a spray distributor fluid passageway having a two dimensional cross section wherein at least one dimension diverges (Fig. 4c) for the purpose of having a fan shape distribution of the atomized fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a spray distributor fluid passageway having a two dimensional cross section wherein at least one dimension diverges in Metrailler et al. in order to have a fan shape distribution of the atomized fluid as taught by Koveal et al.

With respect to claim 19:

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Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to the atomization zone having a two dimension cross section with at least one of the dimensions converging downstream. Koveal et al. teaches an atomization zone having a two dimension cross section with at least one of the dimensions converging downstream (Fig. 5, 104) for the purpose of increasing velocity to promote more shearing of the two phase fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided an atomization zone having a two dimension cross section with at least one of the dimensions converging downstream in Metrailler et al. in order to increase velocity to promote more shearing of the two phase fluid as taught by Koveal et al.

With respect to claim 20:

Metrailler et al. discloses the invention substantially as claimed.

Metrailler et al. discloses:

A central passageway (Fig. 2, 30)

At least one feed inlet (Fig. 1, 14)

An atomization zone (Fig. 2, 35)

At least one atomization fluid passageway (Fig. 2, 33)

Atomization fluid passageway outlets have a forward angle greater than 60 degrees (Fig. 2 and Col. 3, lines 3-5)

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Atomization fluid passageways are positioned concentrically about the perimeter of the central passageway (Fig. 2)

A heating zone (Col. 2, lines 66-69)

Central passageway has a two dimension cross-section wherein at least one of the dimensions converges downstream (Col. 3, lines 22-25)

A first mixing zone (Fig. 1, 11)

A second inlet (Fig. 1, 15)

The second inlet upstream from atomization fluid passageway outlet (Fig. 1)

However, Metrailler et al. is silent to a stream splitter and an atomization zone having a two dimension cross section with at least one of the dimensions diverging downstream. Koveal et al. teaches a stream splitter and an atomization zone having a two dimension cross section with at least one of the dimensions diverging downstream for the purpose of splitting the fluid flow into two identical streams and promoting better atomization of the fluid, respectively.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a stream splitter and an atomization zone having a two dimension cross section with at least one of the dimensions diverging downstream in Metrailler et al. in order to split the fluid flow into two identical streams and promote better atomization of the fluid, respectively as taught by Koveal et al.

Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to the second inlet comprising a sparger. Koveal et al. teaches a



second inlet comprising a sparger (Fig. 7, 198) for the purpose of achieving better movement of the steam and oil mixture.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a second inlet comprising a sparger in Metrailler et al. in order to achieve better movement of the mixture as taught by Koveal et al.

With respect to claim 21:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a second inlet for atomization fluid (Fig. 1, 15).

With respect to claim 23 and 37:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a central passageway that has a two dimension cross-section wherein both of the dimensions converge downstream (Col. 3, lines 22-25).

With respect to claims 25 and 50:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a converging dimension of the central passageway (Col. 3, lines 22-25). However, Metrailler et al. is silent to a diverging dimension of a spray distributor. Koveal et al. teaches a diverging dimension of a spray distributor (Fig. 4c) for the purpose of having better distribution of the fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a diverging dimension of a spray distributor in Metrailer et al., which when implemented would be co-planar with the converging dimension of the central passageway, in order to have better distribution of the fluid as taught by Koveal et al.

With respect to claim 38:

Metrailer et al. discloses the invention substantially as claimed. Metrailer et al. discloses a plurality of feed nozzles (Col. 2, lines 55-57)

With respect to claim 41:

Metrailer et al. discloses the invention substantially as claimed.

Metrailer et al. discloses:

A central passageway (Fig. 2, 30)

At least one feed inlet (Fig. 1, 14)

An outlet (Fig. 2, 35)

At least one atomization fluid passageway (Fig. 2, 33)

A heating zone (Col. 2, lines 66-69)

Circular central passageway (Fig. 2, 30)

Atomization fluid passageways are positioned concentrically about the perimeter of the central passageway (Fig. 2)

Atomization fluid passageway outlets having a forward angle greater than 60 degrees (Fig. 2 and Col. 3, lines 3-5).

However, Metrailler et al. is silent to a spray distributor. Koveal et al. teaches a spray distributor for the purpose of widely distributing the atomized fluid into the reactor.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a spray distributor in Metrailler et al. in order to widely distribute the atomized fluid into the reactor as taught by Koveal et al.

With respect to claim 42:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a second inlet for an atomization fluid (Fig. 1, 15).

With respect to claim 45:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses atomization fluid passageway outlets having a forward angle greater than 60 degrees (Fig. 2 and Col. 3, lines 3-5).

With respect to claim 46:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a circular central passageway (Fig. 2, 30) and atomization fluid passageways that are positioned concentrically about the perimeter of the central passageway (Fig. 2).

With respect to claim 47:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a central passageway that has a two dimension cross-section wherein at least one of the dimensions converges downstream (Col. 3, lines 22-25).

4. Claims 51-53 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metrailler et al. in view of Koveal et al., as applied to the claims above, and King et al. (US 5577668).

With respect to claims 51-53 and 55:

The modified apparatus of Metrailler et al. discloses the invention substantially as claimed. However the modified apparatus of Metrailler et al. is silent to a sparger that allows the fluid to pass into the central passageway in a radial flow, axial flow, or combination of the two. King et al. teaches a sparger (Abstract) that distributes flow in an radial direction, axial direction or a combination of the two for the purpose of evenly distributing a fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a sparger that allows the fluid to pass into the central passageway in a radial flow, axial flow, or combination of the two in the modified apparatus of Metrailler et al. in order to evenly distribute a fluid as taught by King et al.

***Response to Arguments***

5. Applicant's arguments filed 8/26/02 have been fully considered but they are not persuasive.

6. Applicant points out that Metrailer et al. does not teach the amended claims 15, 20, and 41 because Metrailer et al. is silent to a sparger and atomization passageways positioned concentrically about the perimeter. Metrailer et al. does teach atomization passageways positioned around the perimeter as stated above in the rejection. However with the amendment, a sparger was added as further limitations to the claims. The argument for this limitation is moot due to new rejection that was necessitated by the amendment.

7. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

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8. Applicant points out that the King et al. reference teaches a sparger that is used totally differently and is from an entirely different art, and therefore would not be obvious to combine with the primary reference to achieve applicants' invention. The King et al. reference is only used to teach a sparger that allows the fluid to pass into the central passageway in a radial flow, axial flow, or combination of the two, which can be obviously incorporated into the primary reference. In response to applicant's argument, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

9. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

**Conclusion**

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Rudnick whose telephone number is 703-305-3141. The examiner can normally be reached on M-F (8:30 am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

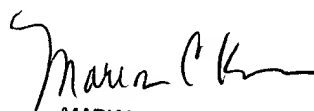
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Douglas W. Rudnick  
Art Unit 1764

dwr  
October 28, 2002



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